and since x^2 is a square it only remains to make $2x$ a square, which it is when $x=2$. But this value of x makes the numbers the same.

Our next value of x is 8 and $x^2=64$, and $2x=16$, which numbers answer the conditions. The next value of x is 18 and the numbers are 324 and 36, and so on *ad infinitum*.

Also solved by *W. H. DRAUGHON, ARTEMAS MARTIN, F. P. MATZ, J. F. W. SCHEFFER, G. B. M. ZERR*, and *J. K. ELLWOOD*.

PROBLEMS.

13. Proposed by ARTEMAS MARTIN, LL. D., U. S. Coast and Geodetic Survey Office, Washington, D. C.

It is is required to find four numbers the sum of whose fourth powers is a square number.

14. Proposed by SYLVESTER ROBINS, North Branch Depot, New Jersey.

Find initial terms in each of three infinite series of prime, integral, rational, scalene triangles, where 9 shall be the base, and the other two sides of every term shall have a constant difference.

15. Problems, or Propositions by M. A. GRUBER, M. A , War Department, Washington. D. C.

(*a*) The *difference* of two *odd* squares is always divisible by 8. Corollary: Every odd square is of the form $8a+1$.

(*b*) The *sum* of two *odd* squares is two times an *odd* number.

Solutions to these problems should be received on or before November 1st.

AVERAGE AND PROBABILITY.

Conducted by B. F. FINKEL, Kidder, Mo. All Contributions to this department should be sent to him.

SOLUTIONS TO PROBLEMS.

6. Proposed by J. F. W. SCHEFFER, A. M., Hagerstown, Maryland.

Find the average length of all the diameters that can be drawn in a given ellipse.

II. Solution by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in New Windsor College, New Windsor, Maryland, and the PROPOSER.

By using the *complement* of the eccentric angle we deduce $OD=a\sin\phi$